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YOUR SEARCH REQUEST AT THE TIME THIS MAIL-IT WAS REQUESTED:  
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LEVEL 1... 8

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THE SELECTED STORY NUMBERS:  
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## LEVEL 1 - 2 OF 8 STORIES

Copyright 1999 Nihon Keizai Shimbun, Inc.  
The Nikkei Weekly (Japan)

October 11, 1999

SECTION: ISSUES & PEOPLE; Pg. 17

LENGTH: 351 words

HEADLINE: Deep-sea water finding its way into food, drinks, cosmetics  
High Mineral Content, Few Germs Appeal To Health Conscious

BODY:

Water pumped from the depths of the ocean is increasingly finding its way into foods and cosmetics.

Sea water at depths below 200 meters is rich in minerals, including magnesium, and contains few germs. Since last year, this deep-sea water has attracted the attention of health-conscious consumers.

Mura-kara Machi-kara Kan, a test-marketing outlet in Tokyo's Shibuya Ward, held an exhibition on Aug. 19-25 featuring food products made using deep-sea water, which included tofu, konnyaku (paste made from the starch of devil's-tongue), drinking water and salt.

Deep-sea tofu?

Daimaru Peacock supermarket began selling fine-grain tofu made with deep-sea water at chain stores in August 1998.

Although the product is priced approximately 30% higher than ordinary tofu, sales increased by 15% from July to August.

"Consumers are very concerned about the ingredients of their food products and are looking for high value-added products," a Daimaru Peacock official said.

Takashimaya Co. started selling Tenkai no Mizu deep-sea mineral water, produced by Akoh Kasei Co., at nine department stores in August. The 500-milliliter product is priced at 225 yen, and the 2-liter product is priced at 800 yen, approximately 50% higher than ordinary mineral water.

According to Takashimaya officials, middle-aged and older female customers appreciate the product's enriched minerals.

Moisturizer

Because deep-sea water contains few germs and helps keep the skin moist, it is also used in making cosmetics. Shu Uemura Cosmetics Ltd. in Tokyo's Minato Ward marketed Deepsea Water lotion in 1998. More than 700,000 units were sold in the first year, nearly three times the projected figure.

Cosmetics company Kose Co. put products made with deep-sea water on the market in July.

Products made with deep-sea water are under development all over Japan. The Kochi prefectural government established a council to promote the use of deep-sea water pumped from points off the Morocco coast, while private companies in Okinawa Prefecture have formed an association to develop the production of deep-sea water.

LOAD-DATE: October 18, 1999

## LEVEL 1 - 3 OF 8 STORIES

Copyright 1999 Times Mirror Company  
Los Angeles Times

August 5, 1999, Thursday, Home Edition

SECTION: Metro; Part B; Page 2; Metro Desk

LENGTH: 1164 words

SERIES: FIRST OF TWO PARTS

HEADLINE: SCIENCE FILE;  
TAPPING INTO THE DEEP;

IN TROPICAL HAWAII, COLD WATER PUMPED FROM FAR BELOW THE OCEAN'S SURFACE IS A HOT COMMODITY. IT IMPROVES THE GROWTH OF PLANTS AND SHELLFISH AND FUELS BIOTECHNOLOGY INNOVATIONS.

BYLINE: SUSAN ESSOYAN, SPECIAL TO THE TIMES

DATELINE: KEAHOE POINT, Hawaii

BODY:

In a coastal lava desert at the western tip of the island of Hawaii, a hodgepodge of unusual plants is thriving. Artichokes, Brussels sprouts, even delicate roses bloom in the broiling sun, alongside the passion fruit and orchids that belong in Hawaiian backyards.

The secret to getting temperate plants to flourish in these harsh conditions lies 2,000 feet below the sun-flecked surf just yards away.

Cold water drawn from the ocean's depths is being piped underground through this experimental plot. Although the salt water never touches the soil directly, it chills the plants' roots, fooling them into performing as if it were perpetually spring.

For John Craven, whose shock of white hair and mobile eyebrows make him look a bit like a mad scientist, this modest vegetable patch represents "a breakthrough for world agriculture." The cold pipes draw moisture from the air, creating condensation that waters the garden, eliminating the need for conventional irrigation.

"It allows us to convert the desert into a sustainable habitat," said Craven, an ocean engineer and president of Common Heritage Corp. "It creates a thermodynamic environment in which the nutrients are pumped up the plants at a great rate. The colder the root, the tastier the vegetables. And when you harvest, the plant doesn't die. It just keeps growing."

The experimental garden is one of two dozen enterprises at the Natural Energy Laboratory of Hawaii, a state research and business park set in a barren, black field of lava rock near Kona International Airport.

It is the only place in the world where large volumes of cold, deep-sea water are pumped ashore for research and commercial use.

Los Angeles Times August 5, 1999, Thursday,

Founded in 1974, when Craven was the state's marine affairs coordinator, the laboratory was originally set up to generate electricity by making use of the difference in temperature between ocean water in the depths and at the surface. That proved possible but not very practical.

Instead, his project has spawned a wide array of activities that weren't anticipated when the first pipeline was plunged into the ocean. More than 16,000 gallons of water arrive on shore per minute, at a chilly 43 degrees Fahrenheit. The water is used to air-condition buildings at the site, and can be mixed with warmer surface water as needed.

But the salt water offers more than variable temperatures. It is clean--free of pathogens--and loaded with nutrients such as inorganic nitrates and phosphates.

Combined with the "free heat" of the fabled Hawaiian sun, the deep-sea water offers ideal conditions for "ocean farming," aquaculture and innovations in marine biotechnology.

#### Clams, Oysters Get Head Start on Life

Tenants at the research park are experimenting with everything from agar-agar, a microbiological growth medium, to medicinal mushrooms. Demand has grown so much that the state plans to put in another pipeline that will nearly triple the volume of water brought ashore, allowing the 300-acre park to expand onto an adjacent 550 acres.

"We're not trying to replace Silicon Valley," said James Frazier, executive director of the Natural Energy Laboratory of Hawaii Authority. "Our type of technology is different. It's biotechnology that uses the resources that are unique along this coastline."

Just down the road from Craven's little organic garden, Taylor Shellfish Inc. and Coast Seafoods Co., two Washington state companies that are among the biggest clam and oyster producers in the country, are giving millions upon millions of tiny specks of larvae a head start on life.

The creatures are coddled for a couple of months on their Hawaiian vacation, enjoying the sun, gourmet fare and pristine ocean waters.

"They're very happy here," said Greg Jakob, general manager for Taylor Shellfish-Kona, surrounded by tiny shellfish in bubbling tanks and raceways. "We adjust the warm water line and the cold water line constantly so we always have optimal temperatures throughout the year. It can be July, but our water can be 40 degrees. The clean, rich, deep sea water is great for us."

The larvae, or spat, feast on algae grown in the deep-ocean water. When they reach roughly a quarter-inch in diameter, about the size of a pencil eraser, the baby mollusks head home, hardy enough to "set" in Northwest waters. If they stayed in Washington through the winter, they would require artificial light and heated water--both costly.

Taylor's Hawaii operation expects to handle 300 million clams and more than 30 million oysters this year, virtually all of the company's production, according to Jakob. A small oyster hatchery recently begun at Keahole is five

Los Angeles Times August 5, 1999, Thursday,

times as productive, for its size, as Taylor's hatcheries on the mainland, he said, and will soon supply all the oyster larvae needed here.

Tenants at the research and business park are charged rates for sea water that cover costs of electricity and system maintenance, but not the capital outlay for the pipelines. The Legislature just appropriated \$ 15 million to install the new 55-inch pipeline, which will reach 1,000 feet deeper into the ocean and bring up water at about 40 degrees, as well as another surface-water pipe and pumps.

#### Similar Research Conducted in Japan

The notion of using deep-ocean water as a renewable resource has spread beyond Hawaii's shores, though it works only where a coastal shelf drops dramatically into deep water, and the water can be piped only so far before it begins to warm up.

In Japan, the government has built smaller pipelines to tap deep-ocean water for aquaculture research, according to Tom Daniel, scientific director of the Natural Energy Lab. Craven's cold-water agriculture concept will soon get a large-scale test when Okinawa's prefectural government launches a commercial spinach-growing operation on Kume Island, he said. That project is supposed to pay for itself.

Makai Ocean Engineering of Waimanalo, Hawaii, which created the Natural Energy Laboratory's pipelines, recently designed a system for Cornell University to plumb the depths of Cayuga Lake in upstate New York. Cold water pumped from 270 feet beneath the surface will be used to air-condition the campus in the summer, according to Reb Bellinger, Makai's manager of project development. Lake Ontario may be tapped in similar fashion by other users, he said.

"There's quite a bit of interest in exploring the potential of deep water now," he said. "It's really starting to move."

#### Cold Water Technology

At the Natural Energy Laboratory of Hawaii, cold water drawn from the depths of the ocean is being put to research and commercial use. More than 16,000 gallons per minute of the chilly water--43 degrees Fahrenheit--is pumped ashore, creating conditions ideal for agriculture and ocean farming. Using deep-ocean water as a renewable resource works only where a coastal shelf drops dramatically into deep water, and the water can be piped only so far before it begins to warm up.

GRAPHIC: PHOTO: John Craven, left, cradles a rose growing among tropical plants thanks to deep-ocean water. PHOTOGRAPHER: SUSAN ESSOYAN / For The Times PHOTO: Greg Jakob of Taylor Shellfish-Kona, right, holds baby clams getting a head start. PHOTOGRAPHER: SUSAN ESSOYAN / For The Times GRAPHIC: Cold Water Technology, ROB HERNANDEZ / Los Angeles Times GRAPHIC-MAP: Keahole Point, Hawaii / Los Angeles Times

LOAD-DATE: August 5, 1999

## LEVEL 1 - 4 OF 8 STORIES

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MARKETING NEWS IN JAPAN

July 15, 1999

SECTION: Business

LENGTH: 359 words

HEADLINE: JAPAN: Industry News: Deep Sea Water Cosmetics Range to Be Extended

BODY:  
Shu Uemura Cosmetics is to extend the range of their cosmetics products containing deep sea water obtained from the Muroto Strait off the coast of Kochi Prefecture on the Western side of Japan. The partially desalinated sea water is to be used in a variety of products, including facial packs and massage creams, etc. The company has announced plans to open a factory in the region from October which will produce a total of 10 different products by 2004, outputting between 1 and 1.5 units annually and generating sales of 1.5 to 2 billion yen.

In 1998, the company first released "Deep Sea Water," a toilet water containing water extracted from a depth of 300 meters. Since its release, the product has gone on to become a major success, recording sales totaling 500,000 units. The product is currently available in 8 water soluble fragrances, with a perfume free type about to be added due to repeated customer demand. A smaller, portable size is also soon to become available.

The company has for some time been conducting research into applications of deep sea water in a wide range of facial and body skin care products. In beauty cream and other skin cream products which remain on the skin for extended periods, the salt content has been reduced, whereas in products such as facial packs and massage creams which are rinsed off the body, the saline concentration has been increased.

The Muroto factory is to be directly supplied with the water by a pipeline from the Kochi Prefecture Marine Research institute, rationalizing transportation and reducing the possibility of bacterial infiltration. The plant is set to be partially operational by autumn of 1999, with full operations commencing in 2000. The plant will produce 50,000 units in the first year, generating sales of between 0.7 and 1 billion yen.

The deep sea water products are currently produced in the Saitama factory on the West side of Japan. To keep up with demand, in February of this year, production was stepped up from 50,000 to 140,000 tons.

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LOAD-DATE: September 20, 1999

## LEVEL 1 - 7 OF 8 STORIES

Copyright 1998 Responsive Database Services, Inc.  
Business and Industry  
Copyright 1998 Pacific Research Consulting, Inc.  
New Cosmetic & Household Products in Japan

June 15, 1998

RDS-ACC-NO: 01769314

LENGTH: 199 words

HEADLINE: Current Topics: Shu Uemura Releases Range of Deep Sea Water Cosmetics

HIGHLIGHT:

Shu Uemura Cosmetics develops skin lotion which uses water extracted from deep within the Muroto Strait off the coast of Kochi Prefecture

BODY:

The cosmetics manufacturer Shu Uemura Cosmetics has developed a skin lotion which uses water extracted from deep within the Muroto Strait off the coast of Kochi Prefecture. Sales of the product are set to begin in August.

While the number of cosmetic products which are natural water is increasing, this is believed to be the first such product which includes actual sea water. The company is now planning to use the water in milky lotions and beauty lotions.

The name of the new product is "Deep Sea Water" (Y2000 for 150cc). Natural herb extracts have been added to the desalinized water. The spray type product is available in a total of 8 fragrances including rose, mint and bergamot. Initial year sales targets have been set at 300,000 bottles.

The water drawn directly from the ocean depths is said to be untainted by man-made chemical substances and contains a balanced supply of essential trace elements.

Shu Uemura in conjunction with the Kochi Prefecture Deep Sea Research Institute has conducted research into the properties of such water since 1996. By October of 1999, the company is planning to establish a second range of deep sea water cosmetics.

TYPE: Journal; Fulltext

JOURNAL-CODE: NEWCOHOP

LOAD-DATE: December 16, 1999



## LEVEL 1 - 8 OF 8 STORIES

Copyright 1992 Nihon Keizai Shimbun, Inc.  
The Nikkei Weekly (Japan)

May 9, 1992

SECTION: SCIENCE & TECHNOLOGY; Pg. 14

LENGTH: 695 words

HEADLINE: Dark, deep waters yield bright ideas;  
Clean, cold, mineral-rich sea water finding applications in numerous fields

BYLINE: BY SHIGEHICO NAKAJIMA, Staff writer

BODY:

The deep sea remains one of the few frontiers left relatively unexplored. But active research has already begun on ways to take advantage of deep sea water, which is cold, pure and rich in nutrients. Application to fish rearing, pharmaceutical production and desalination processes seem most promising.

Sunlight penetrates only around 100 meters into the ocean. Below this level is the deep sea. Here no photosynthesis occurs, but dead organic matter is still decomposed, and the result is a plentiful supply of such inorganic nutrients as nitrogen, phosphorus and silicon. Moreover, deep sea water is basically pure, with few pathogenic bacteria.

There are certain sites throughout the world where deep sea water naturally rises to the surface in eddy currents, bringing with it a rich supply of nutrients. Two such eddy currents within Japan's coastal waters are favorite fishing spots.

By some calculations, the areas where these cold currents flow account for 50% of the total production of all fish species, even though they make up less than 0.1% of the total surface area of the oceans.

Testing the waters

In Japan, the government has teamed up with industry and academia to investigate the potential uses of deep sea water at the Deep Sea Water Laboratory of Kochi in Muroto, Kochi Prefecture.

The laboratory was built three years ago by Kochi Prefecture and the Japan Marine Science & Technology Center. Here, approximately 460 cubic meters of deep sea water are pumped up daily through a pipe extending 320 meters down into the sea at a site 2.7m offshore. The temperature of the pumped water remains below 5 C throughout the year.

Efforts are now focused on ways to exploit the unique properties of this water.

The most ready application is in aquiculture. Sea bream is a gourmet fish, served as a delicacy in expensive restaurants. It is normally difficult to breed, but the laboratory has succeeded in culturing the fish for over two-and-a-half years. Unfortunately, when sea bream are reared in tanks on land their eyes tend to bulge -- an unappetizing result of a difference in pressure

from their natural deep-sea habitat. "There are still a few problems to work out," concedes Yukinori Ueno, chief researcher at the laboratory.

Industry dips in

Private industry is also collaborating with the Japan Marine Science & Technology Center.

Nippon Suisan Kaisha is investigating the use of deep sea water for the breeding of Atlantic salmon and silver salmon -- species which require water no warmer than 15 C -- and to give flatfish species, which do not fare well in warm summer waters, a nice cool place to migrate in the summer. All of these species command high market prices.

Tasaki Shinju Co. is studying the use of deep sea water to breed crayfish. When bred in surface sea water, young crayfish develop fungal infections and must be treated with antibiotics. By using relatively germ-free deep sea water, antibiotics become unnecessary and the death rate among young crayfish is reduced, the company says.

Chlorella Industry Co. is actively studying the use of deep sea water in the pharmaceutical and biotechnology fields. The company believes that the water can be used for stable and efficient culturing of plankton for the mass-production of such useful substances as eicosapentaenoic acid (EPA), a physiologically active compound that lowers blood cholesterol levels and inhibits the formation of blood clots.

Meanwhile, Shimizu Corp., in an effort to promote the breeding of fish in deep sea water, has designed a system that sets and controls water temperature and current flow. The company is now developing an aquiculture system which incorporates this control system.

Elsewhere, engineering applications have also started. Nippon Yusen KK is developing a desalination system that uses warm surface sea water to heat and evaporate deep sea water at reduced pressure. A separate stream of deep sea water is then used to cool the water vapor and produce fresh water. Along with Shimizu, the company has also started applications research in regional air-conditioning systems.

GRAPHIC: Illustration, no caption, BY MASAMI ISHII

Word Count: 974

...Lake in Western Maryland.

On the other hand, Woodcock said, if you jump into the \*water\* at \*Deep\* Creek Lake, \*Ocean\* City or your local \*pool\*, you'll be in for a chilling surprise.

"It's been a relatively cool spring...

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DIALOG(R)File 717:The Washington Times  
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**LIGHTENING up Today's top jockeys take diuretics, induce vomiting and skip meals to stay under 117-pound limit**  
Washington Times (WT) - Friday, May 5, 2000  
By: Rick Snider - THE WASHINGTON TIMES  
Edition: Final Section: SPORTS Page: B1  
Word Count: 1,324

...t think I was going to make it."

Jockeys lose up to five pounds of \*water\* weight in the three-room \*sauna\* over 30 to 90 minutes. Much like \*deep\* \*sea\* diving, they gradually move from hotter to cooler rooms to avoid health risks. Many need ...  
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